effectiveness.

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Usefulness of the Novel Ultrasonography "Vascular Elastography" for Endovascular Therapy

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Background: The success rate of endovascular therapy (EVT) for chronic total occlusion (CTO) of femoropopliteal arteries has improved because of devices development and the introduction of the echo guided EVT from body surface. But now this is still challenging. Elastography is a new ultrasonographic method that has been examined as a diagnostic tool for breast lesions. We applied this method to hardness measurement of CTO by our original method. Our aim was to investigate the usefulness of the novel ultrasonography (US) "vascular elastography (VE)" for EVT.
Methods: In 336 consecutive cases which underwent EVT between April 2010 and January 2011, we focused on 32 cases of EVT for CTO of femoropopliteal arteries. We assessed the CTO lesions by duplex ultrasonography and "VE" about lesion morphology with our original methods before procedure. US was performed with 8 MHz linear transducer (Aprio XG, TOSHIBA, Japan), and off-line analysis of "VE" was performed with elasto-Q (TOSHIBA, Japan). We originally categorized each lesion into three types about hardness (soft, moderate and hard).
Results: We could assess lesion morphologies about elastogram in all cases. In 4 cases, CTO site was assessed soft with thrombus. Therefore we successfully performed thrombectomy and distal protection preventing for distal embolism. In 16 cases with hard morphology, hard guidewire was needed to penetrate lesions and retrograde approach from popliteal artery was performed in 7 cases. Hard plaque which difficultly penetrated without calcification by B mode of US could be assessed in 3 cases. Meanwhile, guidewire passed easily in soft morphology cases. In two cases with CTO in popliteal artery, hydrophilic soft guidewire could pass the lesion at the site of soft appearance by VE. In cases of long CTO, mean operation time in hard morphology group was longer than soft to moderate morphology group(110.4±58.4 vs. 76.8±27.4 minute; p=0.05).
Conclusion: "Vascular Elastography" might be useful when we decide strategies and selections of device in EVT because we could assess the vascular morphology noninvasively before procedure.

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Catheter-Based Renal Sympathetic Denervation: Chronic Preclinical Evidence for Renal Artery Safety

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Background: Background: Renal sympathetic hyperactivity is associated with hypertension, a leading cause of mortality worldwide. Renal sympathetic denervation via the Symplicity Catheter System has been shown to decrease blood pressure by 33/11 mm Hg by six months, with no RF-related adverse sequelae visible by CT/MR angiography or renal duplex ultrasound six months after the procedure. Here we present preclinical work predating those clinical results. We performed therapeutic renal sympathetic denervation in a swine animal model to characterize the vascular safety and healing response six months after renal denervation therapy.
Methods: Methods: In December 2007, seven domestic swine received a total of 32 radiofrequency (RF) ablations via the Symplicity Catheter System and were euthanatized six months later. Renal angiography was done before, immediately after, and six months after procedure. The renal vessels were examined histologically with H&E and Movat pentachrome stains to identify evidence of vascular and neural injury. The kidneys and urinary system were also examined for evidence of gross and microscopic abnormalities.
Results: Results: Renal nerve injury involved primarily nerve fibrosis, replacement of nerve fascicles with fibrous connective tissue, and thickening of the epineurium and perineurium. Renal arterial findings included fibrosis of 10-25% of the total media and underlying adventitia, with mild disruption of the external elastic lamina. No significant smooth muscle hyperplasia or inflammatory components were observed. There was no renal arterial stenosis or thrombosis observed by angiography or histology. No gross or microscopic device-related abnormalities were noted in the kidney, surrounding stroma, or urinary bladder.
Conclusion: Conclusions: In a swine model, renal denervation via the Symplicity Catheter System resulted in no clinically significant adverse renal artery or renal findings six months after the procedure. This is corroborated by the vascular safety profile demonstrated in subsequent human clinical studies.

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Acute Limb Ischemia in an Interventional Cardiology Practice

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Background: Acute limb ischemia (ALI) is traditionally attributed to embolic and thrombotic occlusion of both native arterial segments and bypass grafts. It has also been associated with femoral access-site complications, intra-aortic balloon pump (IABP) use, and vascular closure device use at the time of catheterization. We sought to document the predominant etiologies, primary treatment approaches, and clinical outcomes of patients with ALI in an interventional cardiology practice.
Methods: A prospective database was used to identify all patients with ALI that were managed by a group of interventional cardiologists. A retrospective review of the medical and procedural records, and angiographic data was performed to assess baseline patient characteristics, anatomic details, procedural data, and clinical outcomes. Kaplan-Meier (KM) curves for all cause mortality, amputation-free survival, and primary and secondary patency rates were generated.
Results: Between 2005 and 2010, a total of 43 limbs in 41 patients were treated for ALI. Common femoral arterial access-site complications (40%) and thrombotic etiologies (42%) accounted for a majority of cases, while IABP-related complications (9%) and embolism (9%) were less common. Primary treatment modalities were as follows: mechanical thrombectomy (74%), thrombolytic administration (12%), and surgical revascularization (14%). Overall, therapeutic success was achieved in 38 patients (93%). The KM estimates of mortality, amputation-free survival, primary patency, and secondary patency at one year were 87% [Standard Error (SE)±5%], 80% [SE±6%], 85% [SE±6%] and 87% [SE±6%], respectively.
Conclusion: In this experience of ALI treatment by an interventional cardiology practice with an aggressive endovascular-first strategy, treatment was associated with a high rate of acute therapeutic success and durable outcomes at one year.

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Risk–Stratification in Abdominal Hybrid-Procedures(AHP) of TAAA – Which Scoring System Fits Best?

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Background: AHP as combined endovascular/open approach has been realized in order to minimize mortality in TAAA repair. To make the results comparable to traditional open repair and endovascular side-branch procedures, risk stratification schemes could be applied. The aim of the study was to evaluate such schemes in pts undergoing AHP.
Methods: Between 1998 and 06/2011, 39 pts (25 m; 67 (35-88)yrs) with TAAA were treated by AHP. 28 procedures were conducted electively. TRansperitoneal visceral revascularisation was followed by endovascular aneurysm (75 [60 – 100] mm) exclusion. A retrospective analysis of a prospectively gathered database was performed of all patients with AHP. Per-operative mortality was analysed in relation to risk scoring systems (add EuroScore, log EuroScore, Glasgow Aneurysm Score, Hardman Index, modified Leiden Score, revised Cardiac Index, Lee Index, Giles Risk Score) in order to improve the predictive value of these scoring schemes regarding hospital mortality in AHP of TAAA.
Results: The entire procedure was technically successful in 39 pts.. 12 pts died per-operatively (30-d:n=11, 42nd day:1). All evaluated scoring schemes discriminated between the survivors and the deceased cases (fig.1). But only addEuroScore and logEuroScore reached significances (Mann-Whitney U-test: p=0.001). The ROC statistics received an AUC of 0.838 for both (95%CI-addEuroScore .69-.99, logEuroScore .7-0.98)(fig.2)
Conclusion: The evaluation of different risk scores has confirmed the EuroScore as a reliable tool in AHP. In particular, cardiac risk schemes failed. Upcoming comparative reports about the different therapeutic strategies in TAAA (open repair, AHP, endovascular branched graft procedures) should include a risk scoring scheme. Assessable results should be based on comparable patient cohorts with equivalent risk constellations.

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New Concept for Percutaneous Peripheral Intervention to Calcified Lesion: Aggressive Wire Recanalization in Calcified Atheroma and Dilatation (ARCADIA) Technique

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Background: However percutaneous peripheral intervention are effective and non critical treatment to peripheral artery disease (PAD), In calcified lesion cases, there is a risk for stent under expansion, a lower procedural success rate and a more frequent rate of acute complication, as well as a greater propensity for restenosis.
Methods: We performed this technique to PAD with eccentric calcification. First,

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